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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/595,976

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Martijn Alexander Van Eijkelenborg

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EXAMINER

RADKOWSKI, PETER

ART UNIT

PAPER NUMBER

2883

MAIL DATE

DELIVERY MODE

08/10/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/595,976

Applicant(s)

VAN EIJELENBORG ET AL.

Examiner

Peter Radkowski

Art Unit

2883

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 23 May 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3, 7-9 and 11-12 is/are rejected.
- 7) ☒ Claim(s) 4-6 and 10 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 May 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 8/17/2006 and 11/29/2006.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

***Detailed Office Action***

1. **Claims 4, 5, 6, and 10 are objected to under 37 CFR 1.75(c)** as being in improper form because a multiple dependent claim cannot depend from any other multiple dependent claim. See MPEP § 608.01(n). Accordingly, the Claims 4, 5, 6, and 10 have not been further treated on the merits.

***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

***Claims 1, 2, 3, 7, and 11***

3. **Claims 1, 2, 3, 7, and 11 are rejected under 35 U.S.C. 102(b)** as being anticipated by Vali et al. (5,155,792).

From hereinafter, “Vali” will stand-in for “Vali et al.”

**Regarding Claim 1**, Vali teaches a method of producing a microstructured optical fibre [200] from a preform; (See Vali, col 5., l. 56 – col. 6, l. 64); said method including the steps of:

- creating zones of relatively high refractive index (denoted as cylindrical tubes or solid rods [235]) at predetermined locations in said preform, said zones substantially

Art Unit: 2883

surrounded by material (denoted as [P1], interstitial passageways, and [245] channel) of relatively low refractive index to create an array of light guiding cores; (See Vali, fig. 4 and col.5, ll 56 – 66).

- subsequently drawing said preform to create a length of said microstructured optical fibre [200]; (See Vali, col 6., ll. 12-14).

**Regarding Claim 2**, Vali teaches the step wherein said light guiding cores [220] are surrounded substantially by air (cladding layer [230]); in that the ratio of glass to air in the core [220] is made less than the ratio of air to glass in the cladding layer [23]); (See Vali, fig. 4 and col. 6, ll . 23-25).

**Regarding Claim 3**, Vali teaches the step wherein said light guiding cores have a generally non-circular cross-sectional shape. (See Vali, col. 6, ll. 56 – 62)

**Regarding Claim 7**, Vali teaches a method of producing a microstructured optical fibre [200] from a preform; (See Vali, col 5., l. 56 – col. 6, l. 64); said method including the steps of:

- creating channels of relatively low refractive index [245] at predetermined locations in said preform, said channels acting to define light guiding cores [235] ; (See Vali, fig. 4 and col.5, ll 56 – 66); and
- subsequently drawing said preform to create a length of said microstructured optical fibre [200]; (See Vali, col 6., ll. 12-14).

**Regarding Claim 11**, Vali teaches a micro-structured optical fibre [200], said optical fibre including a plurality of air channels [245], said air channels acting to define light guiding cores [235] between said air channels. (See Vali, fig. 4 and col.5, ll 56 – 66)

*Claims 7, 8, and 9*

4. **Claims 7, 8, and 9 are rejected under 35 U.S.C. 102(b)** as being anticipated by Birks et al. (6,334,019)

From hereinafter, “Birks” will stand-in for “Birks et al.”

**Regarding Claim 7**, Birks teaches a method of producing a microstructured optical fibre [4] from a preform; said method including the steps of:

- creating channels of relatively low refractive index (holes [6] in canes [28]) at predetermined locations in said preform, said channels acting to define light guiding cores (hexagonally arrayed preform fiber [4]); and
- subsequently drawing said preform to create a length of said microstructured optical fibre [4].

(See Birks, figs. 8a-c and col. 10, ll. 12-19);

**Regarding Claim 8 and 9**, Birks teaches a method of producing a microstructured optical fibre [4] from a preform :

- as applied to the method of Claim 7, comprising the step wherein a plurality of holes is drilled into said preform at said predetermined locations to create said channels; (as cited in Claim 8);
- as applied to the method of Claim 8, comprising the step wherein said preform is drawn to form said microstructured optical fibre in a two-stage drawing process; (as cited in Claim 9).

Specifically, Birks teaches the steps of comprising the step wherein a plurality of holes [6] is drilled into a plurality of rods [27] at said predetermined locations to create said channels;

Art Unit: 2883

(See Birks, figs. 8a and 8b; and col. 10, ll. 8 – 12); wherein said preform rods [27] are first-stage drawn into canes [28], then said canes are stacked to form a second preform fibre [4], which is then second-stage drawn into a final fibre; (See Birks, fig. 8c and col. 10, ll. 12-19)

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

***Claim 12***

6. **Claim 12 is rejected** under 35 U.S.C. 103(a) as being obvious over Hoffmeister et al. (3,567,549) in view of Birks et al. (6,334,019).

From hereinafter, "Hoffmeister" will stand-in for "Hoffmeister et al."

**Regarding Claim 12**, Hoffmeister teaches an optical fiber for imaging applications comprising light-guiding cores. (See Hoffmeister, fig. 2, and col. 1, ll. 29 – 41)

Hoffmeister does not explicitly teach that the optical fibre is microstructured and that the light-guiding cores of the optical fiber should comprise air channels.

However, Birks teaches a microstructured optical fiber comprising air channels acting as light-guiding cores. Specifically, Birks teaches a plurality of air channel holes [6] is drilled into a plurality of rods [27]; (See Birks, figs. 8a and 8b; and col. 10, ll. 8 – 12); wherein said preform rods [27] are first-stage drawn into canes [28], which are stacked to form a second preform fibre [4], which is then drawn into a final fibre. (See Birks, fig. 8c and col. 10, ll. 12-19)

Since Hoffmeister and Birks both optical bundles, it would have been obvious, at the time of the invention, to one of ordinary skill in the art modify the imaging optical fiber device of Hoffmeister to have the microstructured air channels of Birks because this low index of refraction medium allows the input image (radiation) to be transmitted in a single mode of propagation. (Birks, Abstract, ll. 6 – 12) One would have been motivated to make this modification because single modes of propagation may benefit systems in which image transmissions are boosted by periodic amplification.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Libori et al. (6,892,018) and Wadsworth et al. (7,116,875).

Art Unit: 2883

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter Radkowski whose telephone number is (571) 270-1613.

The examiner can normally be reached on Monday - Thursday, 8 AM to 5 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank G. Font, can be reached on (517) 272-2415. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, See <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at (866) 217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call (800) 786-9199 (IN USA OR CANADA) or (571) 272-1000.

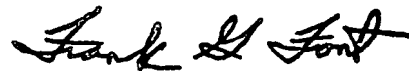


Peter Radkowski



PR

8/2/2007



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